



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,580	02/09/2004	Ferdinando Bruno	NA-1219-CIP 1	5864

7590 10/12/2006

U.S. Army Soldier Systems Center  
15 Kansas Street  
Natick, MA 01760

EXAMINER
----------

TRUONG, DUC

ART UNIT	PAPER NUMBER
----------	--------------

1711

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/775,580	<b>Applicant(s)</b> BRUNO ET AL.	
	<b>Examiner</b> Duc Truong	<b>Art Unit</b> 1711	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.  
     4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,12-14,16,17 and 19 is/are rejected.
- 7) ☒ Claim(s) 2-11,15 and 18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
     a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,12-14, 16-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuelson et al (6,018,018) in view of Akkara et al (Hematin catalyzed polymerization of phenol compounds), both of record on 1449.

The Samuelson reference discloses the enzyme catalyzed polymerization of aromatic monomer such as aniline and phenol (see col. 2, lines 66-67), comprising combining at least one redox monomer with a template and an enzyme, such as horseradish peroxidase, to form a reaction mixture. Note that the redox monomer such as aniline or phenols, aligns along the template before or during the polymerization--- (see Abstract).

Note that the reaction solution is formed by adjusting the pH of a suitable solvent, such as pH is between about 4.0 and about 5.0 for aniline monomer (see col. 3, lines 54-60).

Note that the template includes a polyelectrolyte or an optically active polymer (see Abstract), polyanion or polycation (see col. 4, line 36), sulfonated polystyrene and salts, polynucleotides, deoxyribonucleotides,--- (see col. 4, lines 21-39).

The disclosure of the reference differs from the instant claims in that it does not disclose the claimed hematin catalyst which has been derivatized with one or more non-proteinaceous amphipathic groups.

However, the reference does disclose the use of an enzyme such as horseradish peroxidase.

The Akkara reference discloses the peroxidase catalyzed polymerization of phenols, aromatic anilines and their derivatives using horseradish peroxidase.

Note that the horseradish peroxidase, the enzyme utilizes a heme-iron factor to interact with the peroxide, yielding an oxidized heme-iron complex I that subsequently react with the substrate in a one-electron transfer reaction to produce a substrate radical and a further heme-iron complex II (see Figure 2).

The person of ordinary skill in the art would be motivated to polymerize the aromatic monomer employing the horseradish peroxidase, derived from hematine, as disclosed in Akkara, in order to gain the advantages of the combination of the references, that being this polymerization method provides an environmental friendly, economic, and safe methodology to prepare polymers with different functional groups. (see page 2377, Introduction).

Samuelson reference discloses a method of polymerizing an aromatic monomer using a template and an enzyme such as horseradish peroxidase but it does not determine what it is.

Akkara defines that horseradish peroxidase derived from hematin derivatives.

The determination of said horseradish in the claimed method of polymerizing an aromatic monomer would not provide unexpected results to one of ordinary skill in the art.

In claim 1, "the derivatized hematin catalyst has been previously reacted with---" should be replaced by---the derivatized hematin catalyst has been formed by reacting hematin with---.

In claim 3, line 1, "compromising" should be replaced by --comprising---.

Claims 2-11, 15 and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

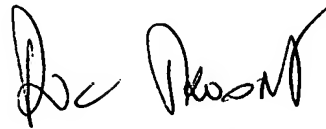
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Truong whose telephone number is 571-272-1081. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 1711

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Ductruong', with a stylized, cursive script.

DUCTRUONG  
PRIMARY EXAMINER

\*\*\*